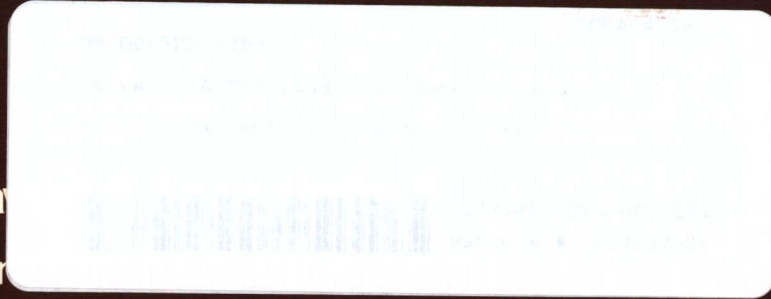


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Engineering and

3/6/89



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A Report Prepared for

Van Waters & Rogers, Inc.
1363 South Bonnie Beach Place
Los Angeles, California 90023

WORK PLAN ADDENDUM I
RCRA FACILITY INVESTIGATION
VAN WATERS & ROGERS, INC.
3950 NW YEON AVENUE
PORTLAND, OREGON

OR 7398

3.6.89

8a

HLA Job No. 9695,105.02

by

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FILE COPY

RECEIVED
MAR 27 1989

WASTE MANAGEMENT BRANCH

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March 6, 1989

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DISTRIBUTION

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1.0 INTRODUCTION

This Addendum to the *Work Plan, RCRA Facility Investigation (HLA, 1988c)*, has been prepared by Harding Lawson Associates (HLA) for Van Waters & Rogers, Inc. (VW&R), to describe additional work proposed to be performed at the VW&R Portland, Oregon, facility (Plates 1 and 2) as part of a corrective action plan. This work is to be conducted pursuant to an Administrative Order on Consent (Consent Order) dated June 15, 1988, between the U.S. Environmental Protection Agency, Region X (EPA), and VW&R. The Consent Order was written in accordance with Section 3008(h) of the Resource Conservation and Recovery Act (RCRA). The corrective action plan includes a RCRA Facility Investigation (RFI) and Corrective Measure Study. This addendum to the Work Plan is submitted to the EPA in partial fulfillment of the terms of the Consent Order.

1.1 Objective

The objective of the RFI is to collect sufficient data to adequately describe the nature and extent of chemicals, if any, in ground water, soil, air, and subsurface gases associated with activities at the VW&R facility. These data will be used to initially screen, evaluate, and develop potential remedial actions for controlling sources and migration of chemicals, and for assessing and supporting appropriate interim remedial actions, if any.

2.0 SCOPE OF WORK

The scope of work proposed in this addendum includes drilling and sampling seven additional on-site soil borings, and installing and sampling five off-site ground-water monitoring wells.

All investigations will be performed using procedures discussed in the *Data Collection Quality Assurance Plan* (DCQAP) (HLA, 1989a) and the *Facility Health and Safety Plan* (HLA, 1989b). The proposed work schedule is presented in Table 1.

2.1 Vadose Zone Soil Characterization

To further characterize the lithology of the vadose zone on and off site, the proposed monitoring wells and soil borings described in Section 2.2 and 2.3 will be sampled every 2.5 feet or at lithologic changes for lithologic description following procedures outlined in the DCQAP.

One or more vadose zone soil samples will be collected from each soil boring and monitoring well borehole and analyzed for grain size, moisture content, density, specific gravity, and air permeability. The samples will be collected, handled, packaged, and transported according to procedures in Section 6.0 of the DCQAP, and the physical tests will be performed by HLA's soil laboratory in Novato, California, according to ASTM test procedures.

2.2 Off-Site Monitoring Wells

To further describe the horizontal and vertical extent of chemicals in ground water and to assess the possibility that chemicals from off-site sources are migrating onto the VW&R site, five additional shallow aquifer ground-water monitoring wells will be installed off site (Plate 3).

Proposed off-site shallow Monitoring Wells SMW-13, -14 and -15 are to be installed downgradient of the VW&R facility to assess the potential for off-site migration of chemicals.

Proposed Wells SMW-16 and SMW-17 have been sited upgradient of the VW&R facility to evaluate the possibility of chemicals in the ground water migrating onto the facility from an off-site source(s). These wells will be installed on either side of an abandoned sewer line to assess whether the sewer line and surrounding backfill act as a conduit for chemicals. Ground penetrating radar (GPR) will be used to locate the sewer line and backfill.

The wells will be drilled using hollow-stem auger methods and will be single cased using procedures described in Section 5.4 of the DCQAP. A typical monitoring well completion diagram is shown on Plate 4. The relevant property owners will be approached for permission to install these monitoring wells on their property. A sample letter, "Off-Site Monitoring Well Installation Permission," is provided in Table 6 of the Work Plan.

2.2.1 Soil Sampling

During the drilling of the monitoring wells, in addition to sampling for lithologic characterization and vadose zone soil physical testing, soil samples will be collected for chemical analysis 2-1/2 feet below ground surface and immediately above the water table. Soil sample collection and preparation will follow procedures described in Section 6.0 of the DCQAP. The soil sampling and analysis program is outlined in Table 2.

2.2.2 Ground-Water Sampling

After their installation, the monitoring wells will be developed, and ground-water samples will be collected and analyzed according to the ground-water sampling

and analysis program described in Table 3. Subsequently, ground-water sampling of the new monitoring wells will be incorporated into the quarterly sampling program described in Section 3.3.2 of the Work Plan (*HLA, 1989c*). Sampling procedures are set forth in Section 7.0 of the DCQAP. Two filled volatile organic analysis (VOA) vials will constitute each sample. Following procedures in Section 15.0 of the DCQAP, one duplicate sample and one field blank sample will be submitted per day of sampling, and one trip blank will be submitted per shipping container.

2.3 Soil Borings

Seven soil borings (DB-18 through DB-24) will be drilled on the VW&R facility at the locations proposed on Plate 5. All borings will be drilled to the ground-water surface in the shallow aquifer zone (approximately 6 to 14 feet below ground surface) using procedures described in Sections 5.0 and 6.0 of the DCQAP.

Proposed Borings DB-18 through -21 will be drilled in areas where soil gas readings were elevated (*HLA, 1989d*). Borings DB-22, -23 and -24 will be drilled on the dock to characterize and assess the vadose zone and ground water quality in this portion of the facility. GPR will be used to locate any underground obstructions prior to drilling the borings on the dock.

2.3.1 Soil Sampling

During drilling of the soil borings, soil samples will be collected for lithologic description every 2-1/2 feet or at lithologic changes. Soil samples will be collected for chemical analysis at 2-1/2 feet below the top of the boring and immediately above the water table. Physical analyses will be performed on vadose zone soil as outlined in Section 2.1. Soil sample collection and preparation will follow procedures described in

Section 6.0 of the DCQAP. The soil sampling and analysis program is presented in Table 2.

2.3.2 In Situ Ground-Water Sampling

Ground-water samples will be collected for chemical analysis from the proposed borings using a Hydropunch ground-water sampling tool (Plate 6). The Hydropunch tool permits in situ sampling of ground water below the bottom of each boring.

The Hydropunch will be driven through the bottom of the boring until its tip is a minimum of 5 feet below the water table. An upward pull then opens the inlet section of the tool, allowing up to 0.6 liter of ground water to flow into the sample chamber. Teflon check balls hold the sample in the chamber as the Hydropunch is brought to the surface. The ground-water sample is then transferred from the chamber through a Teflon tube to VOA vials. The vials will then be delivered to a lab for analysis following procedures in Section 7.0 of the DCQAP and analyzed as outlined in Table 3. Procedures described in Section 2.2.2 will be followed for duplicate samples, field blank samples, and trip blank samples.

The Hydropunch will be decontaminated prior to each use by high pressure steam as per Section 10.1 of the Work Plan. Partial disassembly may be required to thoroughly clean the tool.

2.3.3 Soil Gas Monitoring Well Installation

Boring DB-19 will be cased with 2-inch diameter stainless steel casing and screen for possible use as a soil gas monitoring well. The completion details for a soil gas monitoring well are shown on Plate 7. Construction procedures are similar to those specified for construction of single-cased wells in Section 5.4.1 of the DCQAP.

The well screen will be set in the boring from 1 to 2 feet above the water table to approximately 2.5 feet below ground level. A sand pack will be placed adjacent to

the entire screened interval and will extend approximately 6 inches above the top of the screen.

A 1-foot-thick bentonite pellet seal will be placed above the sand pack. Water will then be added to the pellets to cause the pellets to expand and create a tight annular seal.

The annulus above the bentonite seal will be grouted with a shrink- and chemical-resistant cement-bentonite grout. The top of the casing will be threaded to accept an air-tight cap with a hose connection to facilitate sampling. The well will be completed below grade using a steel well housing with a locking cover set in the annular seal. The soil gas monitoring well will be sampled following procedures outlined in the DCQAP.

2.3.4 Soil Gas Extraction Well Installation

Borings DB-22, DB-23, and DB-24 will be cased with 2-inch-diameter stainless steel casing and screen for possible use as soil gas extraction wells. Soil gas extraction well construction details are shown on Plate 7. Construction procedures are similar to those described for construction of single-cased wells in Section 5.4.1 of the DCQAP.

The well screen will be set in the boring from 1 to 2 feet above the water table to approximately 5 feet below ground level. A sand pack will be placed adjacent to the entire screened interval and will extend approximately 6 inches above the top of the screen.

A 1-foot-thick bentonite pellet seal will be placed above the sand pack. Water will then be added to the pellets to cause the pellets to expand and create a tight annular seal.

The annulus above the bentonite seal will be grouted with a shrink- and chemical-resistant cement-bentonite grout. The top of the casing will be threaded to

accept an air-tight cap. The well will be completed below grade using 18-inch reinforced concrete utility boxes.

3.0 REFERENCES

Harding Lawson Associates, 1989a. *Data Collection Quality Assurance Plan, Van Waters and Rogers, Inc., Portland, Oregon.*

_____, 1989b. *Facility Health and Safety Plan, Van Waters and Rogers, Inc., Portland, Oregon.*

_____, 1989c. *Work Plan, RCRA Facility Investigation, Van Waters and Rogers, Inc., Portland, Oregon.*

_____, 1989d. *Evaluation of Interim Remedial Measures, Van Waters and Rogers, Inc., Portland, Oregon.*

TABLES

TABLE 1. SCHEDULE OF PROPOSED WORK

ACTIVITY	DATE OF ACTIVITY											
	Feb - 16	Feb - 17	Feb - 18	Feb - 19	Feb - 20	Feb - 21	Feb - 22	Feb - 23	Feb - 24	Feb - 25	Feb - 26	Feb - 27
Install New Monitoring Wells	SMW-16	SMW-17	SMW-13*	SMW-15*		SMW-14						
Drill Soil Borings							DB-18 & DB-20	DB-21		DB-19 & DB-22*	DB-23 & DB-24*	
Install Soil Gas Monitoring Well										DB-19*		
Install Soil Gas Extraction Wells										DB-22*	DB-23 & DB-24*	
Sample New Monitoring Wells												X

* Dates of these activities are critical due to accessibility

TABLE 2. SOIL SAMPLING AND ANALYSIS PROGRAM

Well or Soil Boring	Lithologic Sampling (1)	EPA Test Method 8010/8020 (2)	Physical Analysis (3)
SMW-13	X	X	X
SMW-14	X	X	X
SMW-15	X	X	X
SMW-16	X	X	X
SMW-17	X	X	X
DB-18	X	X	X
DB-19	X	X	X
DB-20	X	X	X
DB-21	X	X	X
DB-22	X	X	X
DB-23	X	X	X
DB-24	X	X	X

(1) Sampling interval: every 2.5 feet or at lithologic changes

(2) Sampling interval: at 2.5 feet below the top of the borehole
and immediately above the water table

(3) Sampling interval: one or more sample(s) from material representative
of the vadose zone soil

TABLE 3. GROUND-WATER SAMPLING AND ANALYSIS PROGRAM

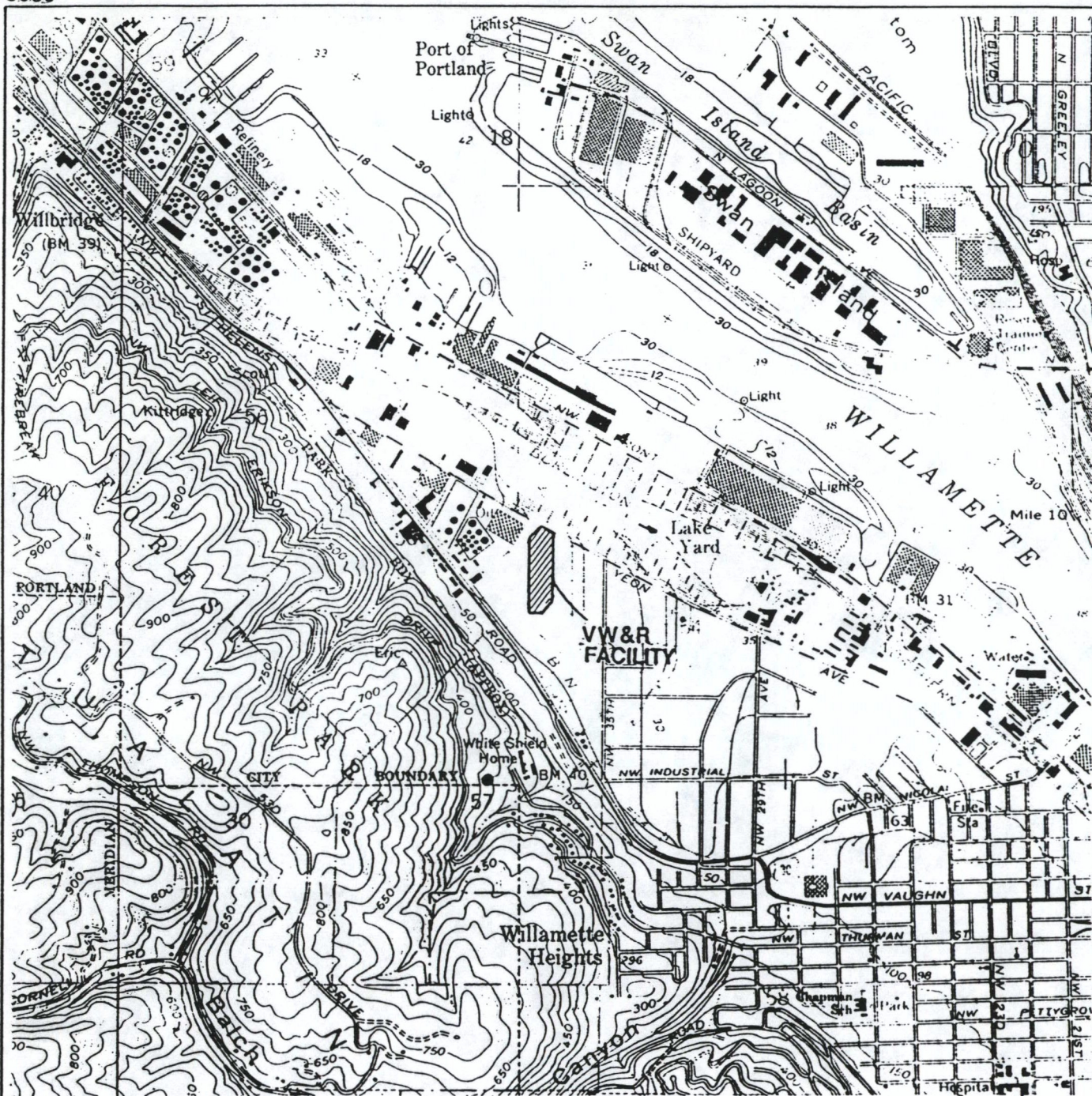
Well or Soil Boring	Sampling Frequency		EPA Test Method		
	Initial (1)	Quarterly (2)	8010/8020	8240 (3)	8270
SMW-13	X	X	X X	X X	X
SMW-14	X	X	X X	X	
SMW-15	X	X	X X	X	
SMW-16	X	X	X X	X	
SMW-17	X	X	X X	X	
DB-18	X		X		
DB-19	X		X		
DB-20	X		X		
DB-21	X		X		
DB-22	X		X		
DB-23	X		X		
DB-24	X		X		

(1) Initial sampling after installation of monitoring well or drilling of soil boring

(2) First quarterly sampling will be May, 1989

(3) EPA Test Method 8240 confirmation analyses in subsequent quarterly samplings will be used for wells with the highest concentrations.

ILLUSTRATIONS



Topographic Base from 7 1/2 min. Quadrangle: Portland, Oreg.- Wash. (1977)

0 2000 4000
SCALE IN FEET



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Engineers and Geoscientists

Location Map
Work Plan Addendum I
Van Waters & Rogers, Inc.
Portland, Oregon

PLATE

1

DRAWN
PM

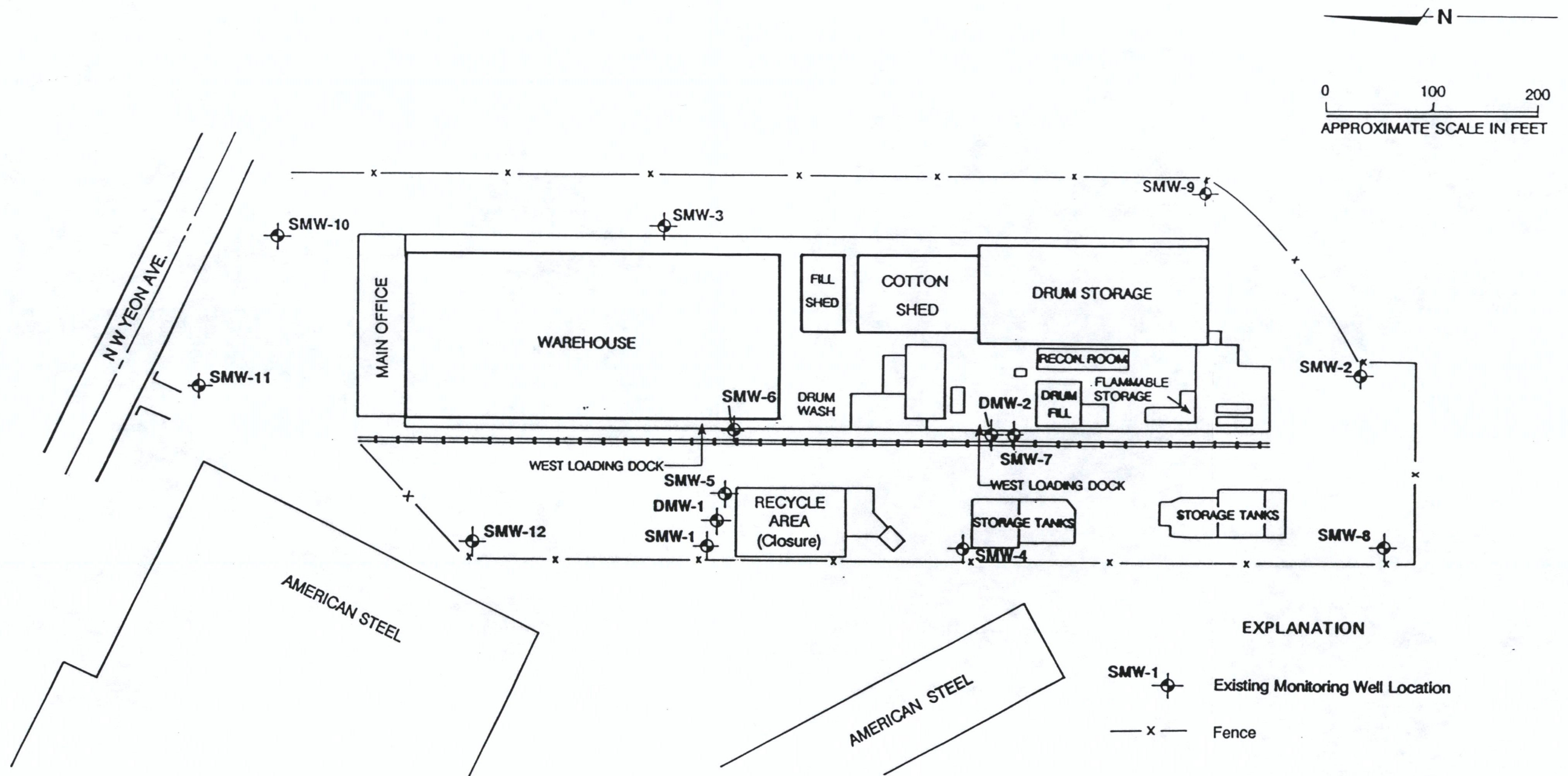
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WV

DATE
2/89

REVISED

DATE



EXPLANATION

- SMW-1 Existing Monitoring Well Location
- x — Fence



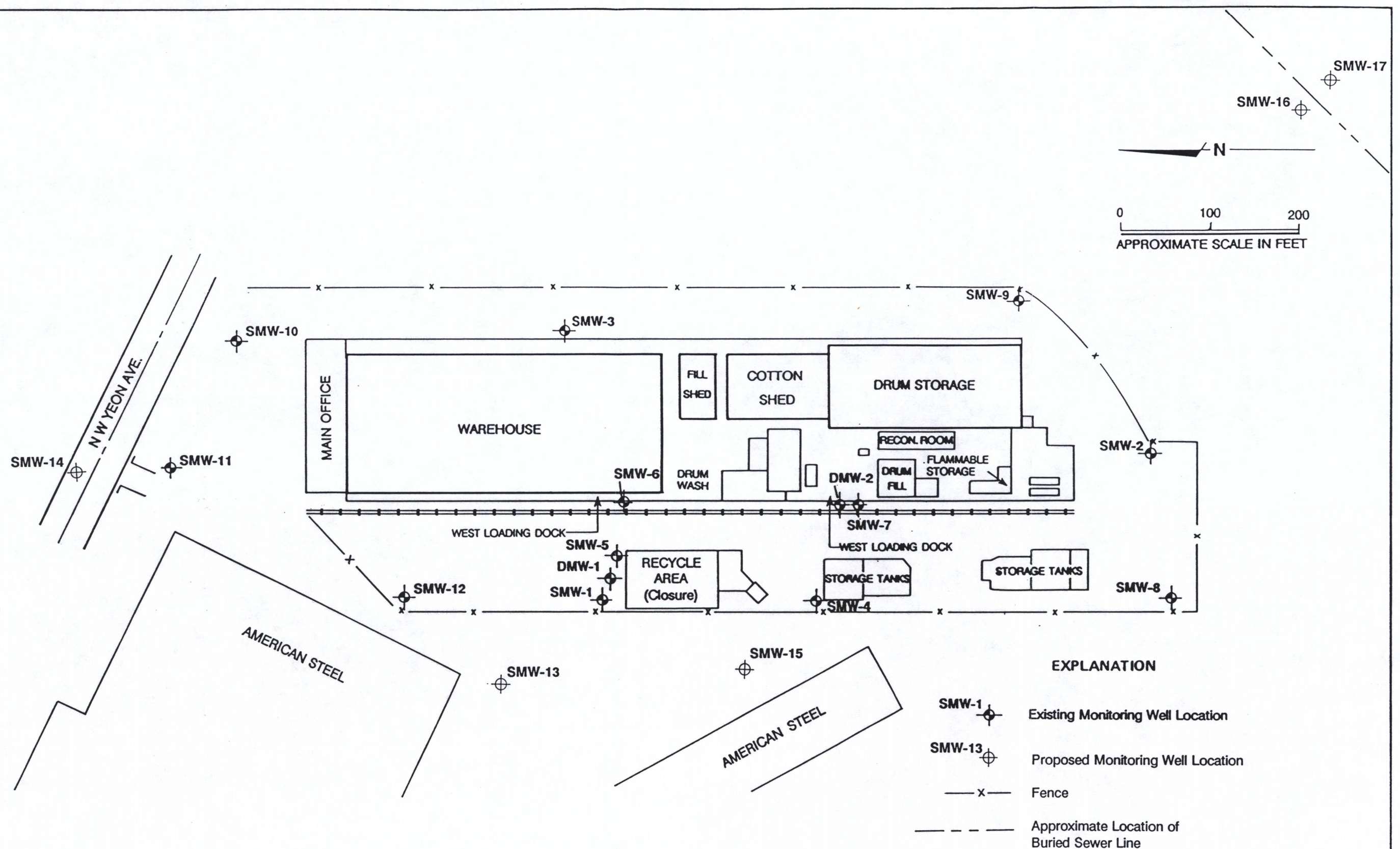
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Site Plan
Work Plan Addendum I
Van Waters & Rogers, Inc.
Portland, Oregon

PLATE

2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
NJB	9695,105.02	<i>WJF</i>	2/89		



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Proposed Monitoring Well Locations
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PLATE

3

DRAWN
NJB

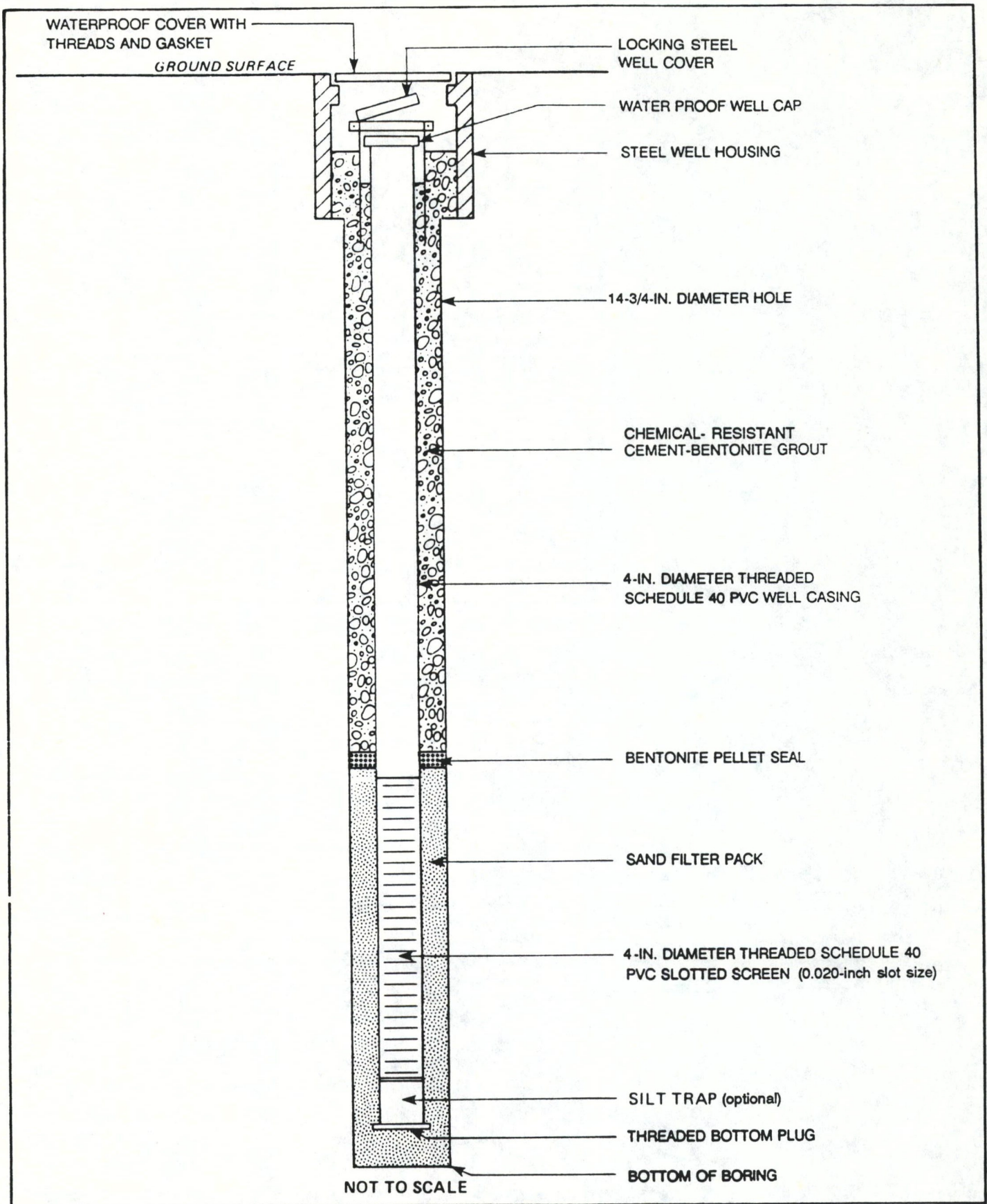
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**Below-Grade Monitoring Well
Completion Diagram**
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Portland, Oregon

PLATE

4

DRAWN

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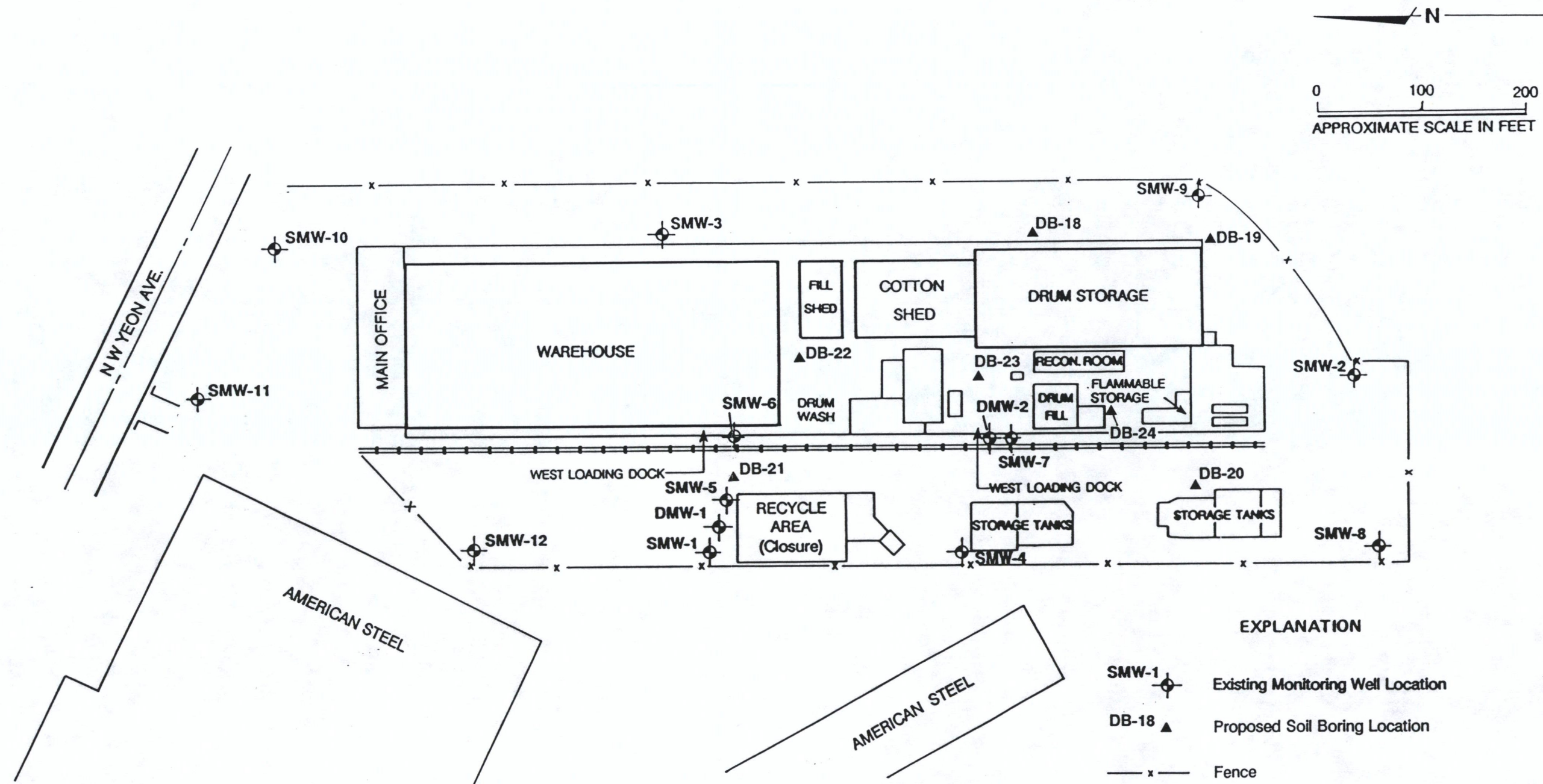
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FORM GW3



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Proposed Soil Boring Locations
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PLATE

5

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
NJB	9695,105.02	<i>WLF</i>	2/89		

BOTTOM OF BORING

WATER TABLE

POSITION OF HYDROPUNCH
IN THE SHALLOW AQUIFER
DURING SAMPLING

HYDROPUNCH EXTENDED,
SHOWING SAMPLE INLET SECTION

HYDROPUNCH IN
CLOSED POSITION

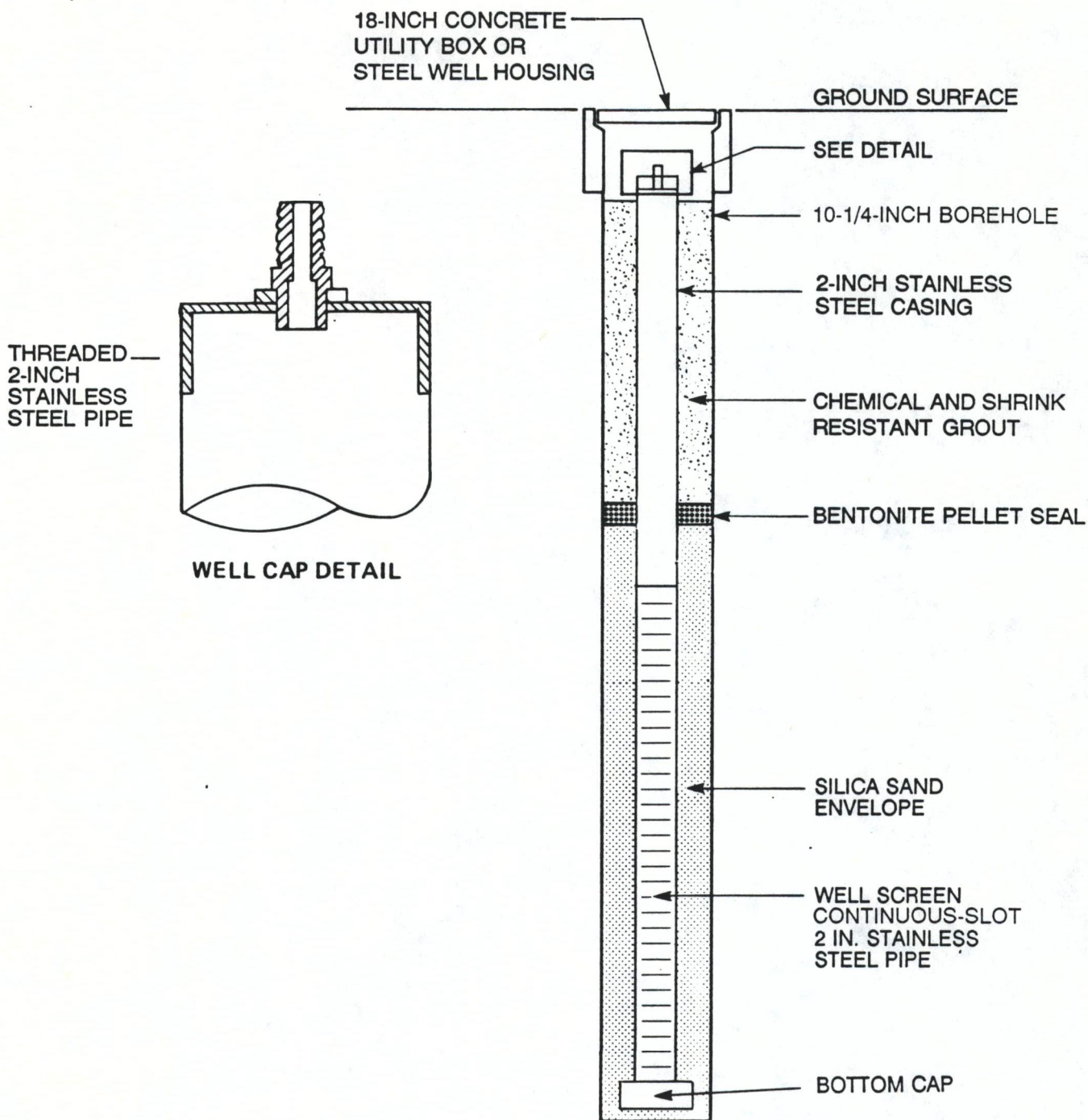
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Hydropunch Tool Schematic
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PK	9695,105,02	<i>W</i>	2/89		



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**Soil Gas Extraction and Monitoring Well
Construction Diagram**
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Portland, Oregon

PLATE

7

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MJC

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